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REMARKS/ARGUMENTS

This application has been reconsidered carefully in light of the Office Action dated as mailed on 21 February 2007. This response is also accompanied by a document entitled **“DECLARATION OF DR. IVAN V. MENDENHALL”** setting forth further facts in support of the patentability of the pending claims over the prior art of record. A careful reconsideration of the application by the Examiner in light of the foregoing amendments, the accompanying Declaration and the following remarks is respectfully requested.

This response is timely filed as it is accompanied by an appropriate Petition for Extension of Time for Filing of Response under Rule 1.136(a) and the associated fee.

No additional claim fee is believed due as a result of this Amendment because neither the total number of pending claims nor the number of pending independent claims is believed to exceed the total number and the number of independent claims, respectively, for which fees have previously been paid. If, however, it is determined that such a fee is properly due as a result of this communication, the Commissioner is hereby authorized to charge payment of such fees or credit any overpayment, associated with this communication, to Deposit Account 19-3550.

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Amendment to the Claims

By the above,

1. claims 1-28 and 34-38 have been canceled without prejudice and
- 2.. claims 39-71 have been added to more fully and completely

5 claim the disclosed subject matter.

Newly added independent claims 39 and 62 find general support in original claims 1 and 19, respectively. Newly added claims 40-56 find general support in prior claims 2-18. Newly added claims 57-61 find general support in prior claims 34-38. Newly added claims 63-71 find general support in prior claims 20-28.

Election/Restrictions

10 In view of the previous election/restriction requirement and corresponding response, claims 52, 53, 60, 67 and 68 would appear to be drawn to earlier nonelected species.

15 In view of the above, claims 39-71 remain in the application.

Claim Rejections - 35 U.S.C. §102 and/or 35 U.S.C. §103

1. **Claims 1-13, 16-23, 26-28, 34-36 and 38 were rejected under 35 U.S.C. §102(e) as being anticipated by or alternatively under 35 U.S.C. §103(a) as obvious over U.S. Patent 6,517,647 to Yamato (hereinafter “Yamato”).**
2. **Claims 1-13, 16-23, 26-28, 34-36 and 38 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 6,143,102 to Mendenhall et al. (hereinafter “Mendenhall”).**

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These rejections are moot in view of the above cancellation of claims 1-13, 16-23, 26-28, 34-36 and 38.

Newly Added Claims

As identified above, claims 39-71 have been added. Claims 39 and 62 are independent claims with claims 40-61 and 63-71, respectively, dependent thereon. Independent claim 39 is directed to a method and requires "adding a quantity of at least one metal aminotetrazole hydroxide to a gas generant formulation whereby after the addition the gas generant formulation has an increased burn rate as compared to the gas generant formulation prior to the addition." Independent claim 62 is directed to a method and requires "adding a quantity of at least about 1 composition weight percent of copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$ to a gas generant formulation whereby after the addition the gas generant formulation has an increased burn rate as compared to the gas generant formulation prior to the addition."

Such claims are believed patentable over the prior art of record as, for example, neither Yamato nor Mendenhall show or suggest a method requiring the addition of a metal aminotetrazole hydroxide or the inclusion of copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$ to or in a gas generant formulation, as required by the claimed invention and such that

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after the addition the gas generant formulation has an increased burn rate as compared to the gas generant formulation **prior to the addition**.

5 The Action states that Yamato discloses a gas generating composition which includes guanidine nitrate, 5-aminotetrazole, and basic copper or zinc nitrate and alleges that the “claimed compounds” are “formed from the combination of 5-aminotetrazole and basic copper or zinc nitrate.” The Action also states that Mendenhall discloses a gas generating composition comprising 30-60 % of a fuel including combinations such as guanidine nitrate and tetrazole complexes of copper or zinc and 40-65 % of basic copper nitrate and alleges that the increase in burn rate
10 is “an inherent property of this composition.”

Claim 39 is a method claim and requires the adding of a quantity of at least one metal aminotetrazole hydroxide to a gas generant formulation. Claim 39 further requires that the gas generant formulation after the addition have an increased burn rate as compared to the gas generant formulation prior to the addition. Claim 62
15 is also a method claim. Claim 62 requires the adding of a quantity of at least about 1 composition weight percent of copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$ to a gas generant formulation. Claim 62 further requires that the gas generant formulation have an increased burn rate after the addition as compared to the gas generant formulation prior to the addition.

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Clearly, neither Yamato nor Mendenhall show or suggest a method requiring the adding of a quantity of at least one metal aminotetrazole hydroxide to a gas generant formulation, as required by claim 39. Nor does either Yamato or Mendenhall show or suggest a method whereby after such addition a gas generant formulation has an increased burn rate as compared to the gas generant formulation prior to the addition, as also required by claim 39.

Also, neither Yamato nor Mendenhall show or suggest a method requiring the adding of a quantity of at least about 1 composition weight percent of copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$ to a gas generant formulation, as required by claim 62. Nor does either Yamato or Mendenhall show or suggest that a method whereby after such addition a gas generant formulation has an increased burn rate as compared to the gas generant formulation prior to the addition, as also required by claim 62.

For at least the above-stated reasons, pending claims 39-71 are believed patentable over the prior art of record and notification to that effect is solicited.

To further facilitate and expedite consideration of the application, reference is made to the accompanying document entitled "**DECLARATION OF DR. IVAN V. MENDENHALL**" ("Declaration"). The Declaration sets forth further facts in support of the patentability of the pending claims over the prior art of record.

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More particularly, the Declaration sets forth that the compositions of Yamato, such as identified in the Final Action in Section 4 on page 3, and such as including 5-aminotetrazole and basic copper or zinc nitrate do not include tetrazole hydroxide salts, rather the reaction of 5-aminotetrazole with basic copper nitrate has been shown
5 (see U.S. Patent 6,958,101 to Mendenhall et al., listed in the Information Disclosure Statement filed on 07 November 2003 as a reference to co-pending U.S. Patent Application Serial No. 10/412,530) to be $2 \text{ Cu}(\text{OH})_2 \cdot \text{Cu}(\text{CH}_2\text{N}_3)_2 \cdot \text{Cu}(\text{NO}_3)_2$, also known as copper, hydroxynitrate 1 H-tetrazol - 5 - amine complex.

Further, the testing and analysis set forth in the Declaration presents
10 chemical and physical values and properties that clearly demonstrate that materials employed in the claimed invention, e.g., copper aminotetrazole hydroxide, are different and unique as compared to the materials of either Yamato or Mendenhall.

It is additionally noted that at least certain of the dependent claims include additional limitations which are believed to render such claims further
15 patentable over the prior art of record. For example, claims 40, 41, and 42, require that after the addition, the at least one metal aminotetrazole hydroxide is present in the gas generant formulation in a relative amount of at least about 1 wt.%, 5 wt.%, and 10 wt.%, respectively. Claim 43 requires, that after the addition, the at least one metal aminotetrazole hydroxide is present in the gas generant formulation in a relative
20 amount of no more than about 25 wt.%. Clearly, as Yamato fails to show or suggest

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the addition of metal aminotetrazole hydroxides, Yamato does **NOT** show or suggest such addition in the claimed relative amounts.

Claim 44 requires that the added metal aminotetrazole hydroxide is selected from the group consisting of copper aminotetrazole hydroxide, zinc aminotetrazole hydroxide and combinations thereof. Claim 45 requires that the added metal aminotetrazole hydroxide is copper aminotetrazole hydroxide. Claims 46, 47 and 48 are dependent on claim 45 and further require that after the addition, the copper aminotetrazole hydroxide is present in the gas generant formulation in a relative amount of at least about 1 wt.%, 5 wt.%, and 10 wt.%, respectively. Claim 49, also dependent on claim 45 further requires that after the addition, the copper aminotetrazole hydroxide is present in the gas generant formulation in a relative amount of no more than about 25 wt.%. Claim 50 is dependent on claim 45 and further requires that the copper aminotetrazole hydroxide has an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$. Claim 51 is also dependent on claim 45 and further requires that the copper aminotetrazole hydroxide is formed by reacting $\text{Cu}(\text{OH})_2$ with 5-aminotetrazole.

As Yamato fails to show or suggest the addition of metal aminotetrazole hydroxides, Yamato clearly does **NOT** show or suggest the addition of such particular metal aminotetrazole hydroxides, the addition of copper

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aminotetrazole hydroxide in the claimed relative amounts, the addition of copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$, nor the addition of copper aminotetrazole hydroxide formed by reacting $\text{Cu}(\text{OH})_2$ with 5-aminotetrazole, as required by the these claims. In this regards it is specifically
5 noted that while claim 13 had been rejected on the basis of the Yamato as a stand alone document, the Action makes no identification in or citation to Yamato for a showing or suggestion of the addition of copper aminotetrazole hydroxide let alone copper aminotetrazole hydroxide formed by reacting $\text{Cu}(\text{OH})_2$ with 5-aminotetrazole, as previously required by claim 13 and as now required by claim 51. Moreover,
10 Example 4 in the application shows the increased burn rates realized by gas generant formulations in accordance with the invention wherein copper aminotetrazole hydroxide is formed by reacting $\text{Cu}(\text{OH})_2$ with 5-aminotetrazole.

Claims 57-59 and 61 are dependent on claim 39 and further require that the addition of the at least one metal aminotetrazole hydroxide be made to gas
15 generant formulations having certain required materials.

Clearly, as Yamato fails to show or suggest the addition of metal aminotetrazole hydroxides, Yamato does NOT show or suggest such addition to gas generant formulations as specifically claimed.

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Claims 63 and 64 require the **addition** of the copper aminotetrazole hydroxide in the gas generant formulation in a quantity of at least about 5 and 10 composition weight percent, respectively. Claim 65 requires that the copper aminotetrazole hydroxide be added in the gas generant formulation in a quantity of
5 no more than about 25 composition weight percent.

As Yamato fails to show or suggest the inclusion of **“copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$ ”**, Yamato does **NOT** show or suggest such addition in the required amounts.

10 Claim 66 requires that the copper aminotetrazole hydroxide is formed by reacting $\text{Cu}(\text{OH})_2$ with 5-aminotetrazole.

As Yamato fails to show or suggest the inclusion of **“copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$ ”**, Yamato clearly does **NOT** show or suggest the inclusion of copper aminotetrazole hydroxide formed by reacting $\text{Cu}(\text{OH})_2$ with 5-aminotetrazole.
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Claims 69-71 are dependent on claim 62 and further require that the inclusion of **“copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$ ”** be to a gas generant formulation having certain required materials.

As Yamato fails to show or suggest the inclusion of **“copper aminotetrazole hydroxide having an empirical formula of $\text{Cu}(\text{CH}_2\text{N}_5)\text{OH}$ ”**,
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Yamato does **NOT** show or suggest such inclusion in gas generant formulations as specifically claimed.

Moreover, as submitted above in regards to at least certain of the dependent claims relative to the disclosure of Yamato, at least certain of the dependent claims include additional limitations which are believed to render such claims further patentable over the prior art of record. As the further limitations of these claims are similarly neither shown nor suggested by Mendenhall, these claims are similarly believed to be further patentable over Mendenhall and notification to that effect is solicited.

Conclusion

It is believed that the above Amendment places all pending claims in condition for allowance and notification to that effect is solicited. However, should the Examiner detect any remaining issue or have any question, the Examiner is kindly requested to contact the undersigned, preferably by telephone, in an effort to expedite examination of the application.

Respectfully submitted,



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